

### **REMARKS**

Claims 1-7 and 9-12 are pending in the present application. Claim 1 is amended herein. Claim 8 remains cancelled. Claim 9-12 have been added.

### **CLAIM OBJECTIONS**

Claims 2-7 are objected to for certain informalities.

Applicant has amended claims 2-7 to address the addition of “carbon” aerogel molded part’ in each claim for consistency.

Reconsideration is respectfully requested.

### **REJECTION UNDER 35 U.S.C. § 112**

Claims 1 and 2 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Applicant has amended claim 1 to remove “essentially” thereby rendering this rejection moot.

Claim 2 has been amended to be consistent with the specification at page 7, first paragraph.

Reconsideration of these rejections is respectfully requested.

### **REJECTION UNDER 35 U.S.C. § 103(a)**

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Field et al. (U.S. Pat. Pub. No.20040077738) in view of Ratke (EP1077097).

The disclosure of Field et al. and Ratke '097 are set forth in paragraphs 4 and 7 of the previous office action have been incorporated into the pending rejection by the Examiner.

This rejection is respectfully traversed.

Applicant submits that Field et al. discloses an insulating composite comprising aerogel particles, hollow spheres and an aqueous binder (see Field, ¶ [0005]). In Field et al. (¶[0009]) it is said that this aqueous binder “surrounds” the hydrophobic aerogel particles and forms a matrix. Thus, Field et al. describes a method wherein aerogel particles and hollow spheres are embedded in a matrix formed by the aqueous binder. Additionally, as pointed out by the Examiner, Ratke '097 is silent as to the use of inorganic hollow spheres.

Under the presently claimed application, the aerogel itself is used as a binder. As such, the object of the present application is a carbon aerogel molded part containing inorganic hollow spheres as filler without the use of any further binders. Thus, since Field et al. neither teaches a specific carbon aerogel molded part nor the combination of aerogels and hollow spheres without aqueous binders. Applicant respectfully requests reconsideration of this rejection.

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratke et al (EP1077097) in view of Field et al. (U.S. Pat. Pub. No.20040077738).

The Examiner contends that Ratke '097 discloses resorcinol-formaldehyde aerogel with molding sand (inorganic filler) and is used to make molded parts by shaking and knocking compression when filling the mold in which the plastic aerogel

can be converted to carbon aerogel in vacuum or protective gas at temperatures above 1000 °C. The Examiner goes on to note that carbon aerogels have extremely small effective thermal conductivities in the order of some mW/(m·k). The Examiner correctly states that Ratke '097 is silent on the inorganic hollow sphere filler.

Regarding Field et al, the Examiner suggests that it discloses an insulation composite comprising aerogel-hollow particle binder composition. The insulation composite and aerogel-hollow particle binder composition can be molded to provide insulation articles such as tiles, panels, or various shaped articles. Suitable hydrophobic aerogel particles include organic aerogel particles, such as resorcinol-formaldehyde or melamine-formaldehyde aerogel particles. The insulation composite and aerogel-hollow particle binder composition are especially suited for applications demanding insulation that provides thermal stability, mechanical strength, and/or flexibility in the mode of application.

The Examiner states that in light of such benefits, it would have been obvious at the time of the invention for a person of ordinary skill in the art to utilize the composition of the hollow spheres and the resorcinol-formaldehyde aerogel to provide thermal stability, mechanical strength, and/or flexibility in the mode of application.

This rejection is also respectfully traversed.

Applicant again submits that Field et al. teaches a matrix of aerogel particles, hollow spheres and aqueous binders as opposed to a carbon aerogel molded part containing inorganic hollow spheres as filler without additional.

According to the present application, the aerogel itself serves as the binder, without requiring additional binder as set forth in Field et al. As it is improper hindsight

to impart the teaching of hollow spheres from Field et al. into the teaching of Ratke '097, wherein Field et al. gives no indication that hollow spheres can be used without aqueous binders, reconsideration of this rejection is respectfully requested.

As to the dependent claims stemming from claim 1, Applicant notes that Ratke '097 requires aerogels that are mixed with sand or plastic particles wherein the filler is present in an amount of between 5 to 60% vol. Not only are the aerogels not mixed with sand or plastic particles according to the present application, but the volume loading of filler, in the form of hollow spheres according to the present application, is at a vol. % of 70 to 90 vol. %. Further, Ratke '097 teaches the use of sand having grain sizes of 0.06 to 0.125 $\mu$ m whereas the hollow spheres employed under the present invention have a diameter of about 20 to 200  $\mu$ m.

In view of the numerous differences between Field et al. and Ratke '097, alone or in combination, as compared to the pending application, Applicant respectfully requests reconsideration.

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ratke et al (EP1077097) in view of Field et al. (U.S. Pat. Pub. No.20040077738).

The disclosure of Ratke '097 and Field et al. are set forth in paragraph 9 of the previous office action and are incorporated herein by reference.

The Examiner contends that Ratke '097 discloses a process of manufacturing carbon aerogel with molding sand (inorganic filler) molded part by 1) producing an aerogel solution; 2) mixing the aerogel solution with molding sand and filling core mold by compressing; 3) gelling the solution; and 4) drying. Ratke '097 further discloses the

plastic aerogel can be converted to carbon aerogel in vacuum or protective gas with temperature above 1000°C. The Examiner correctly states that Ratke '097 is silent on the inorganic hollow sphere filler.

Further, the Examiner goes on to note that Field et al. discloses an insulation composite comprising aerogel-hollow particle binder composition. The insulation composite and aerogel-hollow particle binder composition can be molded to provide insulation articles such as tiles, panels, or various shaped articles. Suitable hydrophobic aerogel particles include organic aerogel particles, such as resorcinol-formaldehyde or melamine-formaldehyde aerogel particles. The insulation composite and aerogel-hollow particle binder composition are especially suited for applications demanding insulation that provides thermal stability, mechanical strength, and/or flexibility in the mode of application.

The Examiner states that in light of such benefits, it would have been obvious at the time of the invention for a person of ordinary skill in the art to utilize the composition of the hollow spheres and the resorcinol-formaldehyde aerogel to provide thermal stability, mechanical strength, and/or flexibility in the mode of application.

This rejection is also traversed.

Field et al. only teaches employing aerogel particles and hollow spheres in conjunction with aqueous binders, whereas claim 7 of the present application as amended relates to parts formed from aerogels having a high filler content in the form of hollow spheres without aqueous binders. As noted above, the aerogel is the binder.

Reconsideration of this rejection is respectfully requested.

## **CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: March 30, 2010

By: /Robert M. Siminski/  
Robert M. Siminski  
Reg. No. 36007

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. Box 828  
Bloomfield Hills, Michigan 48303  
(248) 641-1600

RMS/jao